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10/066,014	10/26/2001	Michael S. Foster	030048024US	2123

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EXAMINER	
WONG, WARNER	
ART UNIT	**PAPER NUMBER**
2668	

DATE MAILED: 12/02/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/066,014	FOSTER ET AL.	
	Examiner	Art Unit	
	Warner Wong	2668	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *08 August 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-57* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-57* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *30 April 2002* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Objections

The following claims are objected to because of the following informalities:

1. **Claim 1, line 4**: The limitation "a port" appears to refer to "destination port" as stated in claim 1, line 2. It should be revised to "the destination port".

2. **Claim 1, line 6**: The limitation "the port" should be clarified as "the destination port".

3. **Claim 1, line 7**: The limitation "a cache" appears to refer to the same limitation as stated in claim 1, line 4. It should be revised to "the cache".

4. **Claim 1, line 8**: The limitation "a port" appears to refer to "destination port" as stated in claim 1, line 2. It should be revised to "the destination port".

5. **Claim 1, line 10**: The limitation "a port" appears to refer to "destination port" as stated in claim 1, line 2. It should be revised to "the destination port".

6. **Claim 1, line 11**: The limitation "the port" should be clarified as "the destination port".

7. **Claim 2, line 1**: The limitation "the port" should be clarified as "the destination port".

8. **Claim 5, line 2**: The limitation "a table" appears to refer to "the table" as stated in claim 1, line 9. It should be revised to "the table".

9. **Claim 5, line 11**: The limitation "a port" appears to refer to "destination port" as stated in claim 1, line 2. It should be revised to "the destination port".

10. **Claim 5, line 4**: The limitation "the port" should be clarified as "the destination port".

11. **Claim 6, line 1**: The limitation "the port" should be clarified as "the destination port".

12. **Claim 17, lines 10, 11-12 and 14**: In each line, the limitation "a destination port" appears to refer to the same limitation as stated in claim 17, lines 7-8. It should be revised to "the destination port".

13. **Claim 18, line 2**: The limitation "a destination port" appears to refer to the same limitation as stated in claim 17, lines 7-8. It should be revised to "the destination port".

14. **Claim 21, line 2**: The limitation "the port" should be clarified as "the destination port".

15. **Claim 21, lines 3-4**: The limitation "a destination port" appears to refer to the same limitation as stated in claim 17, lines 7-8. It should be revised to "the destination port".

16. **Claim 33, line 4**: The limitation "a port" appears to refer to "destination port" as stated in claim 33, line 2. It should be revised to "the destination port".

17. **Claim 33, line 5**: The limitation "the port" should be clarified as "the destination port".

18. **Claim 33, line 7**: The limitation "a port" appears to refer to "destination port" as stated in claim 33, line 2. It should be revised to "the destination port".

19. **Claim 33, lines 9-10**: The limitation "a port" appears to refer to "destination port" as stated in claim 33, line 2. It should be revised to "the destination port".

20. **Claim 33, line 11**: The limitation "the port" should be clarified as "the destination port".

21. **Claim 34, line 2**: The limitation "the port" should be clarified as "the destination port".

22. **Claim 37, line 3**: The limitation "a port" appears to refer to "destination port" as stated in claim 33, line 2. It should be revised to "the destination port".

23. **Claim 37, line 4**: The limitation "the port" should be clarified as "the destination port".

24. **Claim 38, line 1**: The limitation "the port" should be clarified as "the destination port".

25. **Claim 45, line 8**: The limitation "a destination port" appears to refer to the same limitation as stated in claim 45, line 6. It should be revised to "the destination port".

26. **Claim 45, line 9**: The limitation "an identification of a destination port" appears to refer to the same limitation as stated in claim 45, line 6. It should be revised to "the identification to the destination port".

27. **Claim 46, line 2**: The limitation "a destination port" appears to refer to the same limitation as stated in claim 45, line 6. It should be revised to "the destination port".

28. **Claim 49, line 2**: The limitation "the port" should be clarified as "the destination port".

29. **Claim 50, line 2**: The limitation "the port" should be clarified as "the destination port".

Appropriate correction is required.

30. The numbering of claims is not in accordance with 37 CFR 1.126 which requires the original numbering of the claims to be preserved throughout the prosecution. When new claims are presented, they must be numbered consecutively beginning with the number next following the highest numbered claims previously presented (whether entered or not). **There are two claims numbered 46 and claim numbered 48 is missing.**

Misnumbered claims 46-47 been renumbered 47-48.

Claim Rejections - 35 USC § 102

31. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

32. Claims 1-3, 5-9, 13,17-19, 21-23, 27-28, 33-35, 37-39, 43, 45-47, 49-50, 51 and 55 are rejected under 35 U.S.C. 102(b) as being anticipated by Rajan (5,940,596).

Regarding claim 1, Rajan describes a switch/method (routing device) comprising:

when a cache (fig. 3, local address translation unit #44) associated with each of a plurality of source ports (fig. 3, RP(0)-RP(23)) has an identification of a (destination) port associated with the address of the data, [the source port] retrieving the identification of the (destination) port from the cache (col. 2, lines 6-16, where the input port stores in its local cache a small set of address/identifier-to-port translation information);

when the cache associated with the source port does not have the identification of the (destination) port associated with the address of the data and when a table shared by multiple ports (fig. 3, secondary translation unit 52(0)-52(5)) including the source port has the identification of the (destination) port associated with the address of the data, [the source port] retrieving of the identification of the (destination) port from the table (col. 2, lines 17-33).

Regarding claim 17, Rajan describes a switch/method (routing device) comprising:

a shared collection of mappings of identifier to destination ports of the routing device (fig. 3, secondary translation unit 52(0)-52(5));

a plurality of source ports (fig. 3, RP(0)-RP(23)), each source port having:

a component (process) that retrieves an identification of a destination port from the cache (fig. 3, local address translation unit #44) when the cache has a mapping of an identifier associated with communication received at the source port to a destination port (col. 2, lines 6-16);

a component (process) that retrieves an identification of a destination port from the shared collection (fig. 3, secondary translation unit 52(0)-52(5)) when the cache does not have a mapping of the identifier associated with the communication received at the source port to a destination port (col. 2, lines 17-33);

Regarding claim 33, Rajan describes a switch/method for retrieving an identification of a destination port for a (network) communication, the communication

being received through a source port (fig. 3, RP(0)-RP(23)) and having an identifier (source address), the method comprising:

when a cache (fig. 3, local address translation unit #44) has an identification of a (destination) port associated with the identifier (source address) of the communication (data), [the source port] retrieving the identification of the (destination) port from the cache (col. 2, lines 6-16, where the input port stores in its local cache a small set of address/identifier-to-port translation information);

when the cache does not have the identification of the (destination) port associated with the identifier (source address) of the communication (data) and when a mapping shared by multiple ports including the source port (fig. 3, secondary translation unit 52(0)-52(5)) has the identification of the (destination) port associated with the identifier (address) of the communication (data), [the source port] retrieving of the identification of the (destination) port from the table (col. 2, lines 17-33).

Regarding claim 45, Rajan describes a switch/method (routing device) comprising:

means for mapping identifiers (address) to destination ports in a shared collection (fig. 3, secondary translation unit 52(0)-52(5));

means for mapping identifiers to destination ports in a cache collection for each of a plurality of ports ((col. 2, lines 6-9, where the input port stores in its local cache a small set of address/identifier-to-port translation information);

means for retrieving an identification of a destination port from the cache collection when the cache collection (fig. 3, local address translation unit #44) has a

mapping of an identifier associated with a communication to a destination port (col. 2, lines 6-14);

means for retrieving an identification of a destination port from the shared collection (fig. 3, secondary translation unit 52(0)-52(5)) when the cache collection does not have a mapping of the identifier (address) associated with the communication (data) to a destination port (col. 2, lines 17-33).

Regarding claims 2, 9, 18, 34, 39 and 46 Rajan describes all limitations set forth in claims 1, 17, 33 and 45 respectively. Rajan describes the source port/component/means for storing of the identification of the (destination) port retrieved from the table (fig. 3, secondary translation unit 52(0)-52(5)) in its cache (fig. 3, local address translation unit #44) (col. 2, lines 33-35, "The local address translation unit then stores that information in its cache memory.")

Regarding claims 3, 19, 35, 47 Rajan describes all limitations set forth in claims 1, 17, 33 and 45 respectively. Rajan further describes that the cache and the table contain port maps that designate one port, (col. 2, lines 6-9 and col. 2, lines 24-27, where the secondary address translation unit has more address-to-port information.)

Regarding claim 5, 21, 37, 49, Rajan describes all limitations set forth in claims 1, 17, 33 and 45 respectively. Rajan further describes:

when the table shared by multiple ports (fig. 3, secondary translation unit 52(0)-52(5)) including the source port does not have the identification of a port associated with the address of the data, [the component/means for] retrieving the identification of the (destination) port from a source (fig. 3, main translation unit #54) [external to the routing

device] (col. 2, lines 38-45, where the device is considered to be comprised of the input ports and the secondary address translation units separated from the (external) main address translation unit).

Regarding claim 6, 22, 38, 50 Rajan describes all limitations set forth in claims 5, 21, 37 and 49 respectively. Rajan describes the [component/means for] storing of the identification of the (destination) port retrieved from the source external to the routing device (fig. 3, main address translation unit #54) in the table (fig. 3, secondary translation unit 52(0)-52(5)) (col. 2, lines 46-49).

Regarding claims 7-8, 23, 51 Rajan describes all limitations set forth in claims 1, 17 and 45 respectively. Rajan further describes that each table (fig. 3, #52(0)-52(5)) is shared by a corresponding set of four (multiple) [source] ports (fig. 3, RP(0)-RP(23)).

Regarding claims 13, 27, 28, 43, 55 Rajan describes all limitations set forth in claims 1, 17, 33 and 45 respectively. Rajan further describes that the routing device is an interconnect fabric module (cross-point switch) (fig. 1, #12 and col. 3, lines 48-54).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

33. Claims 4, 10-12, 14-15, 20, 24-26, 29-30, 32, 36, 40-42, 48, 52-54 and 57 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rajan in view of Gasbarro (2002/0141424).

Regarding claims 4, 11, 15, 20, 25, 30, 32, 36, 41, 48, 53 and 57, Rajan describes all limitations set forth in claims 1, 17, 33 and 45 respectively. Rajan fails what Gasbarro describes: the address/identifier [portion] of the (Infiniband) communication data is a virtual address/identifier (fig. 3C & 3D, #376 & 384, and paragraph 48 describing the send/receive (Infinband) WQE messages with virtual addresses, "For a send operation, Virtual Address (VA) 376 identifies the starting memory location of the message data to be sent in the sending VI's local memory space."), where VA is used by InfiniBand Virtual Interfaces (VI): paragraph 4, "Using NGIO/Infiniband, a host system may communicate with one or more remote systems using Virtual Interface (VI) architecture in compliance with the 'Virtual Interface (VI) Architecture Specification, version 1.0").

It would have been obvious to one with ordinary skill in the art at the time of invention by applicant to use virtual addresses of Gasbarro in the switch/method of Rajan. The motivation being that the switch may then have the expanded capability to further support (newer) Infiniband-based networks which requires virtual addresses (Gasbarro, paragraph 22, "the present invention is applicable for use with all type of data networks,.. including newly developed computer networks using Next Generation I/O, Future I/O, InfiniBand, ..")

Regarding claims 10, 14, 24, 29, 40 and 52 Rajan describes all limitations set forth in claims 1, 17, 33 and 45 respectively. Rajan fails what Gasbarro describes: the address/identifier is a portion of a Fiber Channel frame (& Fiber Channel compatible) (paragraph 22, "The present invention is applicable for use with all types of data networks.., Example of such data networks may include a local area network (LAN), .. LAN systems may include Ethernet, .. Fiber channel, ..", where it is inherent that fiber channel uses fiber channel frames.)

Regarding claim 12, 26, 42 and 54, Rajan describes all limitations set forth in claims 1, 17, 33 and 45 respectively, including the address/identifier-to port translation table in the network switch.

Rajan fails what Gasbarro describes: the table/shared collection/mapping in the network switch (fig. 1 and 2) translates (Infiniband) frames having virtual addresses (i.e. a virtual address/identifier label/translation table) (fig. 3C & 3D, #376 & 384, and paragraph 48-49 describing the send/receive and the read/write (Infiniband) WQE messages with virtual addresses via the network switch of fig. 1 & 2).

It would have been obvious to one with ordinary skill in the art at the time of invention by applicant to modify the switch of Rajan to a switch described by Gasbarro which supports virtual addresses. The motivation being that the switch may then have the expanded capability to further support (newer) Infiniband-based networks which requires virtual addresses (Gasbarro, paragraph 22, "the present invention is applicable for use with all type of data networks,.. including newly developed computer networks using Next Generation I/O, Future I/O, InfiniBand, ..", where Infiniband uses Virtual

Interfaces (VI) (paragraph 4, "Using NGIO/Infiniband, a host system may communicate with one or more remote systems using Virtual Interface (VI) architecture in compliance with the 'Virtual Interface (VI) Architecture Specification, version 1.0"), in which VI uses virtual addresses, (paragraph 48, "For a send operation, Virtual Address (VA) 376 identifies the starting memory location of the message data to be sent in the sending VI's local memory space."))

34. **Claims 16, 31, 44, 56** are rejected under 35 U.S.C. 103(a) as being unpatentable over Rajan in view of McGarvey (5,777,989)

Rajan describes all limitations set forth in claims 1, 17, 33 and 45 respectively.

Rajan lacks what McGarvey describes: the address/identifier is a TCP domain (i.e. IP dotted notation) address (col. 1, lines 20-32).

It would have been obvious to one with ordinary skill in the art at the time of invention by applicant to explicitly mention the use of (TCP) domain address in Rajan. The motivation being that (TCP) domain addressing is standardized by RFC 1034 and is widely used, and network devices/methods using the (TCP) domain addressing may than be compatible to most existing networks. Furthermore "Conformance to RFC 1034 enables the same name space to be used with different protocol families in dissimilar networks and applications" (McGarvey, col. 1, lines 23-26).

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure: Arndt (2003/0058875), Kalpathy (2002/0039365) and Dahlgren (5,754,791).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Warner Wong whose telephone number is 571-272-8197. The examiner can normally be reached on 5:30AM - 2:00PM, M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chieh Fan can be reached on 571-272-3042. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Warner Wong
Examiner
Art Unit 2668

WW

CHIEH M. FAN
PRIMARY EXAMINER